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LSI CORPORATION			SENF, BEHROOZ M	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/716,222

Applicant(s)

LINZER, ELLIOT N.

Examiner

Behrooz Senfi

Art Unit

2621

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-20 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 10/17/2007 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 – 3, 5 – 12 and 19 - 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (US 7,016,418) in view of Howe (US 5,900,865).

Regarding claim 1, Wang discloses, a decode processor memory manager configured to (i.e., fig. 1), divide a first picture from a video signal into a plurality of picture segments (fig. 4, image 410), divide each one of the picture segments into a plurality of tiles (i.e., fig. 4, shows the dividing picture segments, e.g., Y and UV, into plurality of tiles) and generate a list associating each one of the tiles to a corresponding one page of a plurality of pages in a corresponding one bank of a plurality of banks in a first memory (i.e., figs. 1 and 3, memory controller 140, col. 8, lines 34 – 52) such that each one of the picture segments has (a) at least a first one of the tiles associated with a first of the banks (i.e., figs. 3 – 4, tile memory, col. 8, lines 53 – 67) and (b) at least a second one of the tiles associated with a second of the banks (i.e., ; figs. 3 – 4, tile memory, col. 8, lines 53 – 67) and a memory access unit configured to store the

first picture in the first memory according to the list (i.e., DRAM 160, for storing first picture).

Note: A direct memory access unit as specifies in the claim; is a memory unit to store picture data among physical pages, as defined in the claim. In view of this, Wang teaches a memory unit 160 “such as DRAM” which is used for storing the picture data among the physical pages, as discussed in the above.

Wang does not explicitly states, direct memory access unit “DMA”, as recited in the claim.

However, Howe ‘865 clearly teaches the use of direct memory access unit “e.g. fig. 1a, DMA106” in image processing (please see; fig. 1a, DMA 106, col. 7, lines 2 – 11 and col. 8, lines 57 – 67 of Howe).

In view of the above, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the mapping data in memory of Wang in accordance with the teaching of Howe by incorporating a direct memory access unit “DMA”, which allows an automatic fetching of an entire reference picture area, while crossing the minimal number of DRAM page boundaries, as suggested by Howe (i.e. col. 4, lines 20 – 24).

Regarding claim 2, the combination of Wang and Howe teaches, the device according to claim 1, further comprising a second memory configured to store the list and transfer the list to the direct memory access unit (i.e., figs. 1a and 3a, DRAM and DMA, col. 16, lines 27 – 60 of Howe).

Regarding claim 3, the combination of Wang and Howe teaches, further comprising memory manager configured to, generate a map allocating space in the first memory to store the first picture and store the map in the second memory (i.e., figs. 1a, 1c and 3a, col. 7, lines 37 – 52, cols. 11 – 12, lines 47 – 3 of Howe).

Regarding claim 5, the combination of Wang and Howe teaches, device according to claim 1, wherein each one of the picture segments comprises four of the tiles spatially arranged to share a common corner (i.e., fig. 3, block 380 of Wang).

Regarding claim 6, the combination of Wang and Howe teaches, the device according to claim 1, wherein each of the picture segments is mapped to at least four of the banks in the first memory (i.e., fig. 3 of Wang).

Regarding claim 7, the combination of Wang and Howe teaches, the device according to claim 1, wherein the picture segments of the first picture are stored in a plurality of physically non-contiguous address ranges in the first memory (i.e., col. 16, lines 27 – 33 of Howe).

Regarding claim 8, the combination of Wang and Howe teaches, the device according to claim 1 wherein each of the picture segments comprises one group of a plurality of luminance samples and a plurality of chrominance samples from the first picture (i.e., fig. 4, col. 10, lines 30 – 58 of Wang).

Regarding claims 9 – 10, the combination of Wang and Howe teaches, the device according to claim 1, wherein tiles comprise a plurality of spatially square regions (i.e., fig. 4, of Wang).

Regarding claims 11 and 20, the limitations claimed are substantially similar to claim 1 above, therefore, the ground for rejecting claim 1 also applies here.

Regarding claim 12, the combination of Wang and Howe teaches, storing the first picture using a plurality of direct memory access operations (i.e., fig. 1a, DMA 106, col. 8, lines 60 – 62 of Howe).

Regarding claim 19, the combination of Wang and Howe teaches, wherein each one of the picture segments is mapped to all of the banks in the first memory (i.e., fig. 3 of Wang).

4. Claims 13 – 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Howe and Newman et al. (US 5,301,288).

Regarding claim 13, the combination of Wang and Howe teaches, mapping picture segments, as discussed with respect to claim 1 above.

Wang is silent in regards to explicit of, marking the plurality of memory segments as used.

Newman '288 in the same field teaches, a picture segment descriptor including a flag "e.g. marker" for indicating whether or not the segment allocated to the image is full "e.g. used" or empty "e.g. not used" (please see; col. 8, lines 1 – 38 of Newman).

In view of the above, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the mapping picture segment allocation in video decompression processing of Wang in accordance with the teaching of Newman by incorporating a flag "e.g. marker" for indicating whether or not the segment allocated to the image is full "e.g. used" or empty "e.g. not used" (please see;

col. 8, lines 1 – 38 of Newman), to determine whether the segments contain sufficient address space, which was not previously allocated “e.g. used”, as suggested by Newman (i.e. col. 8, lines 36 – 37 of Newman).

Regarding claim 14, the combination of Wang, Howe and Newman teaches deallocating the memory segments from the first picture to free space in the memory (please see; col. 3, lines 36 – 51, table and map which are used to free “e.g. deallocate” the memory segments of Newman).

Regarding claim 15, the combination of Wang, Howe and Newman teaches, marking the memory segments deallocated from the first picture as free (i.e. col. 3, lines 36 – 51 of Newman; as discussed in claim 14 above, indicates table and map used to free “i.e. deallocate” memory segments).

Regarding claim 16, the combination of Wang, Howe and Newman teaches, mapping a second picture from the video signal to the memory segments including at least one of the memory segments deallocated from the first picture (i.e., col. 3, lines 36 – 51 of Newman and col. 2, lines 26 – 50 and col. 8, lines 34 – 52 of Wang).

Regarding claim 18, the combination of Wang, Howe and Newman teaches, generating a value identifying which of plurality of memory segments in the memory are mapped to the first picture (i.e., col. 8, lines 1 – 38 of Newman, generating a picture segment descriptor including a flag “e.g. value/marker” for indicating whether or not the segment allocated to the image is full “e.g. used/allocated” or empty “e.g. not used/not allocated”).

5. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Howe and Newman, further in view of Bateman (US 2004/0075750).

Regarding claim 17, Although Wang teaches the size of the memory and block can be changed (i.e., col. 9, lines 25 – 46), but is silent in regards to explicit of, first picture has a different size than the second picture.

Batman (i.e. figs. 4 – 5 and page 3, paragraphs 0033, 0036 and page 5, paragraph 0055) determines the amount of memory available for newly captured image and resizing “e.g. change sizes of the image, image having different size” the images to reduce the memory occupied by the captured images “e.g. free some space by resizing the images”).

In view of the above, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to combine the teaching of Wang and Batman to check the amount of memory available for the new image “e.g. different size” to be stored, by rescaling image/data if necessary as the memory gets filled up, as suggested by Bateman (i.e. page 1, paragraph 0010, lines 3 – 4).

Allowable Subject Matter

6. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

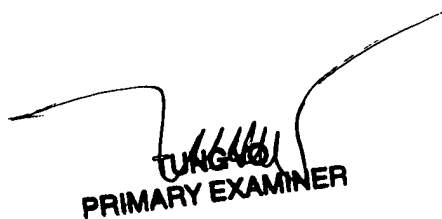
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Behrooz Senfi whose telephone number is 571-272-7339. The examiner can normally be reached on M-F 7:00-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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TUNG
PRIMARY EXAMINER

Behrooz Senfi
Examiner
Art Unit 2621